vaccinated. Two had smallpox and two had not. I asked to see their arms, and she added: "But these two did not take." In a third case we found a young man who had smallpox. I asked to see his scar, and he showed me a mark on the lower part of the arm. I remarked that it was a funny place to have a vaccination scar, and on examination I found it to be nothing more than the scar of an old boil. These are specimens of the histories we obtained. I have made it a point to ask health officers about cases of reported smallpox after recent vaccinations, and the result is that I have not found any cases where the vaccination had really been successful, though there have been several cases where the disease has followed old vaccinations. In Winona, where the disease was epidemic, the inspector reported that there were only a few cases of smallpox in which there was any evidence of successful vaccination, and in the most recent of these cases vaccination had been performed six years previously. Some of the patients had been vaccinated with some of that very poor lymph that was on the market for a time, and only a very faint mark was left. It was frequently found that one individual who had been properly vaccinated escaped the disease while others in the same household who had not been similarly protected became infected. In my opinion there is nothing more positive than the protection afforded by recent vaccination. Even smallpox itself is not more protective against the recurrence of the disease.

DR. D. E. HOAG, Brooklyn—I think the point as to many physicians not knowing how to vaccinate is a good one. Five out of ten practicing physicians may be said to be in this position. And what is worse, you have these men sent out by boards of health to perform vaccinations in a wholesale way. Their work is often done in a perfunctory manner, so many cases in an hour, and little attention is paid to asepsis or anything else. The act of vaccination is really a very delicate one and we have much yet to study and learn regarding it. My own experience, although limited to local work, has furnished me many contradictory results. I had a family of patients none of whom had ever been vaccinated. I started in with board of health vaccine. I tried it six times, but got no results. Then the family went to another physician, and it seemed to take all right, the result being that I lost my patients. As to the preparation of the arm, I would like to say a word. I have found some physicians who prepare the arm with bichlorid solutions, which I do not approve of. Others do nothing at all, and yet get good results. It seems to me important that we should at all events make the site of the operation aseptic, and that we should study the technic more than is done.

DR. H. D. HOLTON, Brattleboro, Vt.—I should like to have some further information as to the kind of scar that may be relied on to show that a person has been properly vaccinated.

DR. SPALDING—It is very difficult to say what constitutes a typical scar. There should be some discoloration. There should be pitting. The mark should be rather deep; a superficial scar is to be regarded with suspicion.

DR. HOLTON—Given a patient about fifty years of age who has not been vaccinated since childhood, would you not insist on a vaccination? Also: will you kindly state how you prepare the arm for vaccination?

DR. SPALDING—You can not be certain. Your best plan is to try it again. As to the preparation of the arm, you can use any ordinary disinfectant. Be sure, however, that the arm is washed with sterile water. I prefer a soda solution followed by alcohol. In regard to technic: about as neat a method as I know is to throw a drop of the vaccine on the arm before scarifying, and then rub it till the arm is red, but without bringing blood. I sometimes find sores as large as a quarter—I remember one case in which it was an inch square. These are altogether unnecessary, and are the things which bring vaccination into disrepute.

Bad Breath.—To remove offensive odors, such as are due to whisky and tobacco, E. J. Kempf (*Indiana Med. Jour.*) asserts there is nothing more effectual than 1 part of hydrogen peroxid in 5 parts of rosewater.

TWO CASES OF RETINAL DETACHMENT TREATED WITH SUBCONJUNCTIVAL IN- JECTIONS OF SALT SOLUTION.*

ROBERT L. RANDOLPH, M.D.

BALTIMORE.

I am aware that in speaking of the treatment of retinal detachment I am telling, so to speak, a story, the ending of which we can all pretty well surmise. But even negative results are helpful in getting at the truth of these matters, and I am not so sure but that they help us quite as far along the road as positive results. It is not necessary for me to review the history of this subject or to recall the fact that the treatment of retinal detachment might well be named failure. I shall go straight to the substance of this communication, then, without referring to the various methods of treating this affection. I have been struck with the results obtained by Dor, Winselmann and others when using subconjunctival injections of a salt solution. I put this treatment to a test in the following cases:

CASE 1.—The first case was that of an Irishman who came to the Johns Hopkins Hospital about two years ago. I found that his right eye had useful vision and that a cataract had been removed from his left eye. This operation had been apparently successful, but he had not retained vision longer than three months when detachment of the retina occurred, and this condition he had endured for eighteen months when he came under my care. With the exception of a triangle embraced between say 105 and 165 degrees with its apex almost touching the optic nerve the retina appeared entirely detached. He had light perception and nothing more. I put him to bed on April 20, 1900, and on that day gave him his first hypodermic injection of a syringe of normal salt solution. The injection was made as far as possible behind the corneal border. A compress bandage was then applied. The next day there was some redness near the point of the injection. He had experienced no pain. This treatment was kept up for a week, the injections being made every other day. During the second week a solution of the strength of six grains to the ounce was employed. The third week the solution was strengthened to ten grains, the fourth week to fifteen grains and the fifth week to twenty grains to the ounce. The injections, as usual, were given every other day. After the first week there was always a marked reaction which increased objectively and subjectively in proportion to the amount of salt in the solution. During the third week the pain was severe and lasted for an hour after the injection. During the week when the solutions were of the maximum strength the pain lasted for several hours and the conjunctival congestion was very intense. The patient was never allowed even to sit up. An ophthalmoscopic examination made at this time showed the retina in place but, with the exception of the triangular area which was originally attached, no part of the fundus gave back a clear red reflex. He could now count fingers at two feet. It was my intention to persist in the treatment, using each week a stronger solution, but he declined to remain inactive any longer and he left the hospital at the commencement of the sixth week.

CASE 2.—The second case was a particularly favorable one for testing the value of the treatment. J. L. T., forty-one years old, came to me on June 2, 1901, with the report that the day before he had noticed a veil pass suddenly across his sight and since then he had only been able to see indistinctly things above the level of his own head. Examination showed a detachment of the retina which, roughly speaking, took in more than the upper half of the retina. This condition had occurred the day before, but four days previously he had been troubled with a dimness of vision in the eye. He had a myopia in this eye of about five diopters. It is rather interest-

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee: Drs. Frank Allport, H. V. Würdemann and J. A. Lippincott.

ing in this connection to note the fact that he had consulted an optician ten days previously and had been given a pair of glasses to wear for reading. The right glass was concave 6.50 and the left was convex 1.50. When he first put these glasses on he had experienced intense pain in his myopic eye. He was told, however, to persist in wearing these glasses, which he did. The dimness which has been mentioned then appeared and culminated in the almost complete loss of vision, which was shown to be due to a detachment of the retina. He was put on his back the next day and exactly the same treatment was followed as in the first case. In this case the patient invariably suffered considerably after the injection and he was never able to stand a solution stronger than fifteen grains to the ounce. Once an injection of a twenty-grain solution was given and he suffered all that night. In two weeks I found that he could readily recognize every one in the room and that he could tell the time by his watch. The treatment was kept up for five weeks and all this time he was kept in bed. At the commencement of the sixth week I took him to my office and found that his vision was over 20/40ths with —5 Ds and that the retina was everywhere attached. For obvious reasons I did not attempt to make any lengthy subjective test. This condition remained for two weeks when the weather, becoming intensely hot, he was allowed to go to the country. This was the first week in August. Three weeks later he wrote me that his blindness had returned, brought on, he thought, by a long ride over rough roads on a fishing trip.

He came back to the city and I found the detachment pretty much as in the first instance. He was put to bed and every other day a syringeful of salt solution (fifteen grains to the ounce) was injected beneath the conjunctiva. In two weeks his vision was about where it was before he had gone away. This condition, however, did not persist, for from now on his sight grew steadily worse and by the first of October had gone back to the first stage of the affection. He refused to stay in bed or to have any more injections made, as he was unable to lose any more time from his work and had about made up his mind to get through life with one eye. At no time during his trouble had he been allowed to use his other eye for reading. I saw this patient last week, a little over a year since the trouble occurred, and there is practically little difference in the condition now from what it was when he first came under my observation.

It will be seen from this that the treatment in both cases was beneficial. The tendency of the method seems to be to do good. The marked local reaction which invariably occurred must be regarded as an advantage, acting probably as a revulsive and producing pretty much the same effect as the punctate cauterizations described by Dor and others. On several occasions the congestion and edema persisted for days, and there was often considerable tenderness in the region of the injection. The last case being a fresh detachment offered a particularly favorable opportunity for testing the value of this method, and while the immediate effect of the treatment was to restore vision, this effect was transient. The importance, then, of withholding from publication glowing accounts of cure in this class of cases is perfectly evident. At least a year should elapse before a just estimate can be made of the value of the treatment. It is almost certain that rest in bed played a conspicuous part in the improvement. Speculation as to the manner in which subconjunctival injections act in these cases seems to me superfluous.

The technic was as follows: The speculum, fixation forceps and hypodermic syringe were boiled five minutes before using. The salt solution was boiled in a test tube three minutes, so also the cocain. A compress bandage was applied immediately after the operation, and kept on all the time. When the reaction was intense a pad moistened with a solution of lead and opium was placed over the lid and the bandage applied as before.

DISCUSSION.

DR. C. R. HOLMES, Cincinnati—About four or five years ago I had the pleasure of seeing Deutschmann's results in his operation for detachment of the retina. I saw the cases when the process of healing had taken place and the retina had re-applied itself, and I saw cases that came to his clinic that had been operated on a considerable time before. I was impressed with the operation and ordered a complete set of his instruments. Previously, I had sent a case there and the patient stayed four or five months, but did not do well, cataract developed and it was not a satisfactory case. I have tried it in four eyes, but have not had any very brilliant results. Last summer I asked Deutschmann if he could suggest anything and he said we should make the cuts more frequently, five, ten or fifteen times, clear through the globe. Injections of vitreous from the rabbit's eye were only resorted to in a few cases.

DR. LUCIEN HOWE, Buffalo, N. Y.—Last winter I made a few sections of the globe and my attention was attracted to the relation of the lymphatics of the eye to the sheath of the globe. If the injection goes between the globe and the capsule it may have some effect, but if through outside the capsule or in some distant portion of the orbit it might as well be injected into the ear.

DR. HERMAN KNAPP, New York—One word about the operative treatment in these cases. I have seen only temporary results, with one exception, and that is iridectomy in secondary complications of detachment or its cause. Detachment of the retina may remain partial and may certainly get better in the course of time. In a number of these cases there is an inflammatory basis, which produces mild irritation and when treated it may get better and the eye remain in the state of partial detachment.

I will mention, as proof, one case: a lady with detachment of the retina, first in one eye and then in the other. The first eye had an iritis, which, we all know, is progressive in the majority of cases. She had some sight left and I made an upward iridectomy in order to prevent secondary degeneration. It did very well and now, four years after the operation, she has only partial detachment and she has had no further iritis, or any inflammatory symptoms.

DR. S. D. RISLEY, Philadelphia—I have been very much pleased with the conservative tone of Dr. Randolph's paper. I think he states my experience very well when he says the tendency of salt injections is to do good. Dr. Knapp has, I think, struck the key-note in the matter, certainly for cases of detachment in myopic eyes. We should hardly expect any permanent results in these cases of stretched or enlarged eyeballs with their underlying pathologic conditions of the choroid. The salt solution always seems to do good and a number of times I have seen the retina reattach itself, wholly or partially, even in myopic eyes, but always detachment recurs. In one case it recurred, after an apparent cure lasting a number of weeks, during the journey to the hospital on a hot day. I do not remember ever to have seen a permanent cure of retinal separation in high myopia, and in others, only when produced by some traumatism occurring in otherwise healthy eyes.

DR. E. E. HOLT, Portland, Maine—Dr. Risley's experience causes me to rise and say that after Mittendorf read his paper before the American Ophthalmological Society a number of years ago, I had a case that year with very marked detachment, and she had 8 diopters of myopia. I began the injection of pilocarpin and then gave the solution of pilocarpus, a gram to the dose; gave her massage and kept her in bed and the retina reattached itself and her vision returned. That was in '84 and I have seen her nearly every year since. She is a lady who travels and she has never had any trouble since. She reads a great deal, too. I have had several cases of reattachment under such treatment.

DR. G. E. DE SCHWEINITZ, Philadelphia—This subject of detachment of the retina has always been of considerable interest to me and I am inclined to think that Dr. Risley understates his results. I have had good results with the subconjunctival injections by using a weaker solution than

has been advocated. I have never used the gelatin, but the physiologic salt solution. The rapidity of reattachment has been a remarkable thing to me. I have always followed the injections by somewhat prolonged massage of the eye. That has seemed to me to promote circulation and the absorption of subretinal products. I use 0.6 per cent. solution with the ordinary hypodermic syringe containing about thirty minims. I have also had the misfortune to see rapid reestablishment of the original pathologic condition. It seems to me to be the best method recently employed. I have never seen Deutschmann's method used.

DR. RANDOLPH, in closing—I am glad that Dr. Howe emphasized his point. I stated in my paper that the injection was made as far back as possible and obliquely downwards. The anatomic conditions suggest such a course. I do not think we should withhold treatment no matter what the pathogenesis. The treatment seems to be harmless and there is a general tendency to do good. I would like to have Prof. Haab say something about the treatment on the Continent.

PROF. O. HAAB, Zurich, Switzerland—I can not say much about this treatment of Deutschmann's. I have tried it, but have had almost the same results as with the other methods. I visited him and saw some six or seven cases of his in very good condition, but my experience has not been so favorable. He says it is necessary to perform the incision sometimes ten, twelve or fifteen times, but it is very difficult to get a patient to come for fifteen operations in a clinic, and so I can not say exactly whether the method is a good one or not. It must be further studied.

THE EVOLUTION OF THE TREATMENT OF PELVIC INFLAMMATION.*

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PHILADELPHIA.

Standing to-day as we do on the summit of perfected work in pelvic surgery, it is difficult for us to appreciate the helplessness of those who have preceded us in this field. Meiggs, the accomplished writer, the brilliant teacher and the leading practitioner of his day, describes in graphic terms the tubal tumor filled with water, pus or blood, and says, "the Fallopian tubes may be the seat of inflammation which will render fecundation impossible, but they are equally impossible of diagnosis during life." No one could present a more brilliant word picture of death from ectopic gestation than could he, but he was forced to end with the wail, "Alas, what can we do? Where is the surgeon who would be brave enough to open the abdomen on an uncertain diagnosis?" Much as he realized that surgery would afford the only hope of saving the life of the afflicted, he could not consistently urge its practice when he was calling on the attorney general to administer condign punishment on Atlee for his temerity in invading the peritoneal cavity for the removal of ovarian cysts.

The occurrence of pelvic inflammation in its various forms, involving tubes, ovaries, pelvic peritoneum and pelvic cellular tissue, could not escape the acute investigation of accurate observers; but its effects were most frequently observed after death. The course of invasion and its cause of development were not understood.

The influence and significance of micro-organisms had not yet encroached on the horizon of human intelligence. Failure to recognize their significance as a cause of disease kept them in terror from the invasion of the peritoneum for surgical purposes. The surgeon rash enough to enter found his reputation damaged by the frightful mortality which followed his action. The

utilization of the principles enunciated by Pasteur in the investigations and practice of Lister, dispersed the thick cloud which had enveloped the progress of surgery and gave its advocates the ability and courage to investigate new and hitherto forbidden fields. The occurrence of pelvic suppuration had been recognized and its ravages appreciated, but in combating it, Thomas was an advanced leader, when in 1868 he advised that "operation should be deferred until all the efferent lymph has been softened, until all the abscesses have been coalesced and until the accumulated pus has broken down the tissue between itself and the channel of evacuation." The abscess may open through the vagina, the rectum or the abdominal wall.

Doubtless most of you know men who apparently have not passed 1868 in their methods of practice. Into this state of chaos broke Tait like a brilliant meteor in 1872, when he advocated and practiced the removal of the uterine appendages for inflammatory conditions. His axiom, "when in doubt make an exploratory incision," proved the searchlight in pelvic surgery. There was no longer excuse for want of knowledge of the course and results of pelvic inflammation, for his enthusiastic disciples were frequently in doubt and considered his teaching as the only true gospel.

As a consequence, no portion of the abdomen or pelvis was free from investigation, and every phase in the course of inflammatory conditions was subjected to accurate observation. The secretions and fluid collections were carefully studied and the association of internal conditions with external infections did not fail of discovery. The macroscopic study of the invasion of internal structures by micro-organisms promptly revealed the fact that these parasites generally reached the internal organ through the continuous mucous membrane and dispelled the previously held view that the cellular tissue was the structure most frequently involved. Tait was so profoundly impressed with the idea that the invasion was through the continuous mucous membrane that he was induced to advocate the removal of both ovaries and tubes when the appendages of one side were diseased, even though those of the other were as yet free, because he found that very frequently the remaining tube and ovary became affected when permitted to remain and necessitated resort to a second operation. This principle carried further led Pean, Baldy and others to advocate the removal of the fundus of the uterus, whenever conditions were such as to demand the extirpation of both ovaries. The doctrine that the uterus should accompany the appendages in their flight led to the division of the leaders into two schools, one of which would attack all cases through the vagina, while the other faction was equally vehement in the advocacy of the abdominal as the only true route for the removal of these structures. As is usually true, the happy medium lies between the two.

The application of the principles of Tait by his enthusiastic followers led to such a wholesale castration of women that there was aroused a wholesome fear that if permitted to increase in arithmetical progression there would be a marked reduction in the progress of the race. This reaction affected not only the profession, but the patients, who were deprived of the function of procreation, which possibly they had decried when they were its possessors, and now overvalued that which was lost.

Our study now became how to save rather than to sacrifice, and we retraced our lines of study and sought how to arrest the inflammatory process before it had involved the deeper structures. Such investigation

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